4. On some new Australian Species of Crustacea. By C. Spence Bate, F.R.S., F.L.S., etc.

(Plates XL. and XLI.)

The following species of Crustacea were collected and sent to the British Museum by Mr. Angas, who obtained them during his sojourn in Australia. *Angasia pavonina* is figured from a coloured drawing taken of the animal, while living, by Mr. Angas; the others are from preserved specimens by the author.

Angasia, White.

Hippolyte *similis, sed rostrum sine carina dorsali, et sine appendice ad mandibulam.*

Like *Hippolyte*, except that the dorsal surface of the carapace is horizontally continuous on the rostrum, and gradually converges laterally to a point, and the mandibles are without any secondary appendage.

This genus was founded by Mr. Adam White, and orally described by him at a Meeting of the Zoological Society, for the purpose of receiving a very pretty species that was brought from Australia by Mr. Angas.

The arrangement in this memoir differs from that of Mr. White in making the form a genus instead of a subgenus. This I do, first, because a subgenus appears to be both an inconvenient and an unnatural arrangement; and second, because whenever there is any structural distinction, however unimportant it may appear to be to our cognizance, yet it is impossible to classify such a species together in a genus with others not possessing the same structure. For quick detection, no doubt variation in form may be more appreciable for observation than an alteration of structure; but it stands to reason that the latter, however small, must be far more important in the economy of the animal's life than the former. It must also be taken into consideration that we seldom find any structural alteration, however small, without perceiving a more or less important variation in the condition of some other part of the same animal.

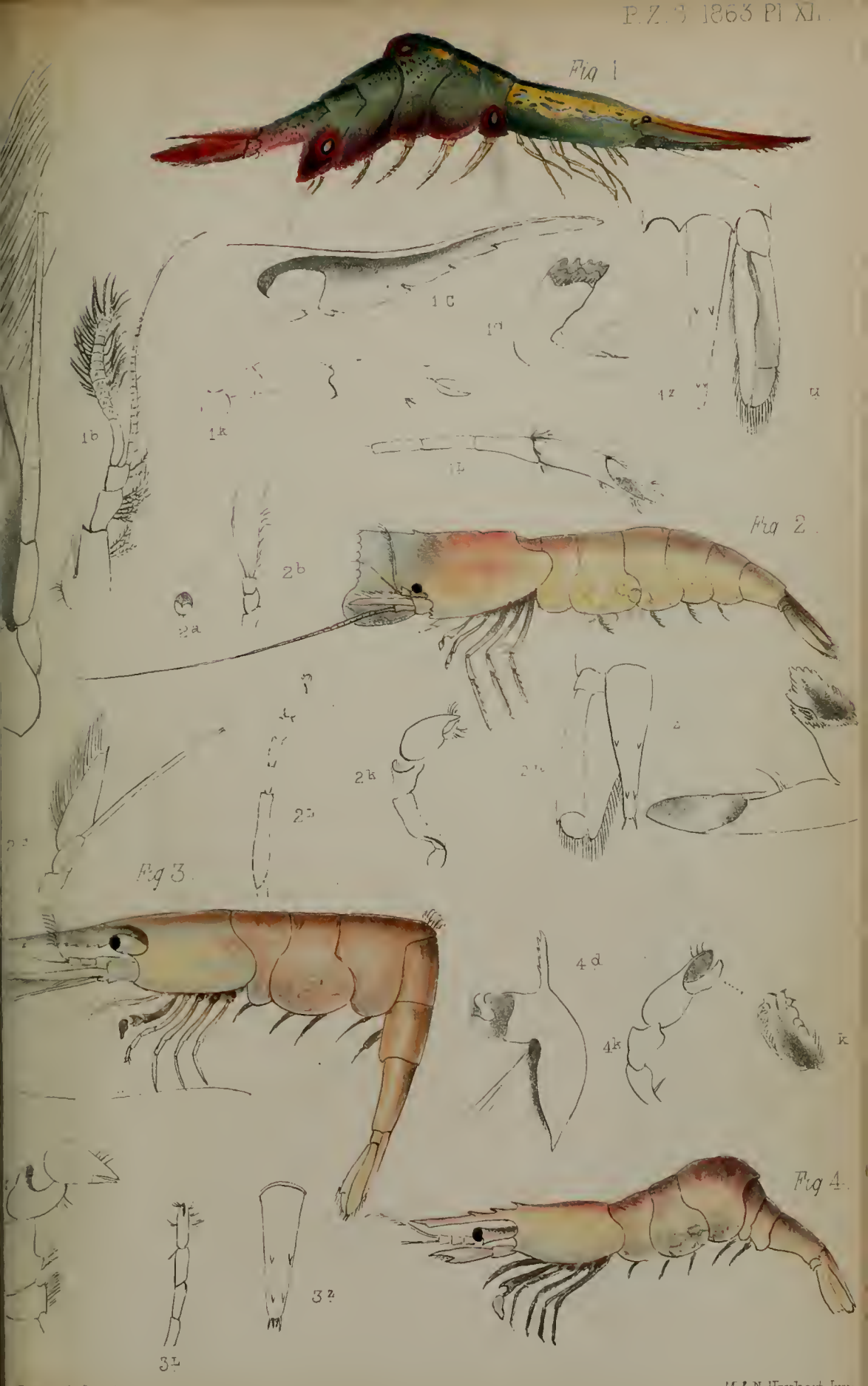
This genus is closely allied to *Hippolyte*, from which the most palpable distinction exists in the absence of the carinated ridge that traverses the rostrum and the dorsal surface of the carapace, and in the more important feature of the absence of the apparently insignificant appendages attached to the mandible.

Angasia pavonina. (Pl. XL. fig. 1.)

A. *rostro tam longo quam carapax, et antenna inferiore tam longa quam pars dimidia pleontis sui.*

Length $2\frac{1}{2}$ inches.

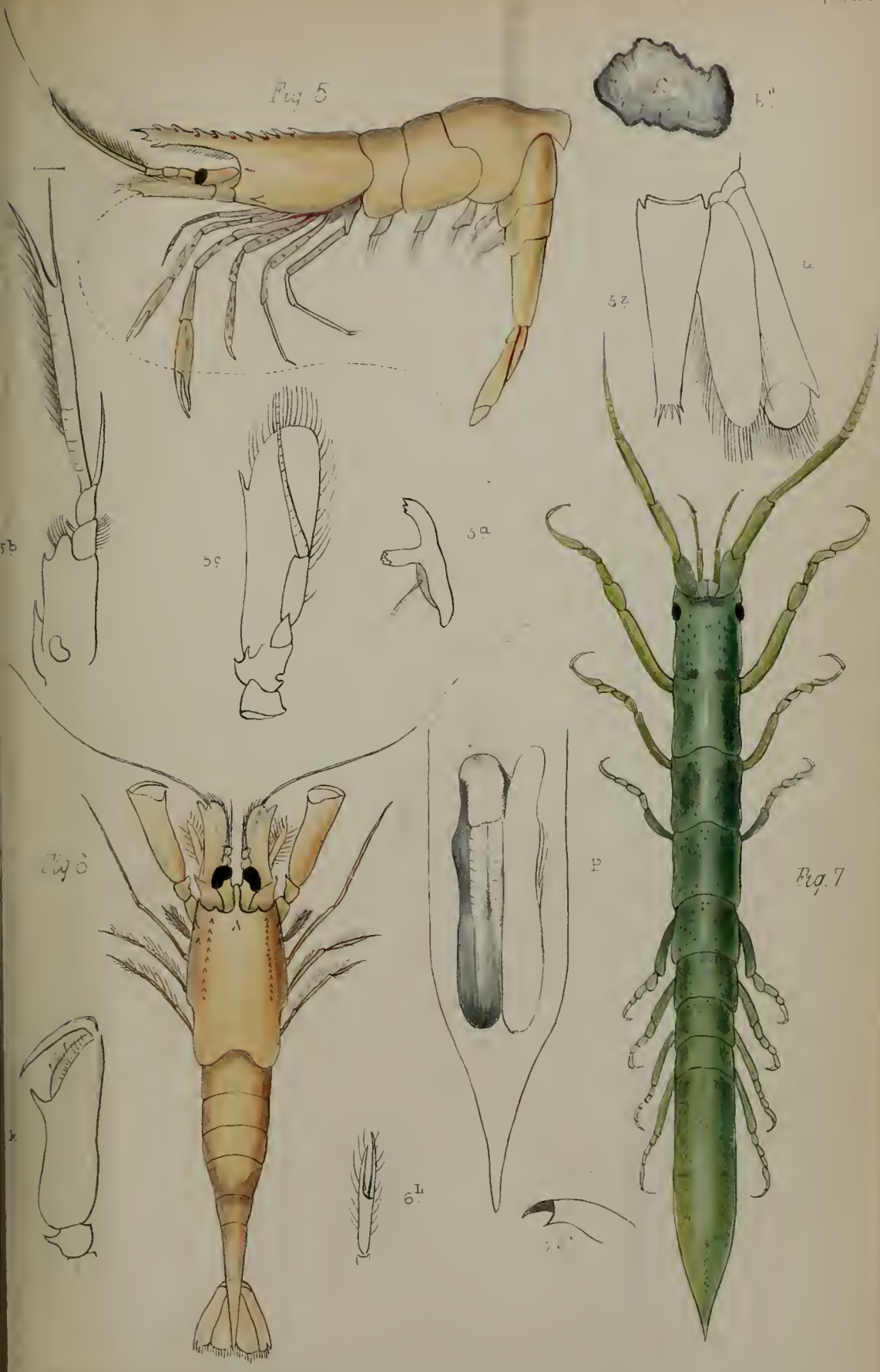
This, the only species that has been found, has the rostrum quite as far projecting in advance of the eye as the carapace extends posteriorly to it, with a deep carina upon the inferior surface, having the margin furnished with four small teeth. The eye is elevated upon a



Smith lith ad nat.

M&N Hanhart Imp

NEW AUSTRALIAN CRUSTACEANS



M.th. lith ad. nat.

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long peduncle. The superior antenna is short, the extremity of the flagella reaching scarcely more than half the length of the rostrum, and scarcely longer than the peduncle, the first joint of which is armed with a tooth as long as the joint. The inferior antenna has the squamiform appendage reaching nearly to the extremity of the rostrum, and the flagellum reaching more than the length of the rostrum beyond it. The mandible differs from that of *Hippolyte* in the absence of the small secondary appendages, and in having the molar surface more denticulated and less furnished with hairs. The second pair of gnathopoda are flat or spatuliform, fringed at the apex with eight or nine robust teeth. The first pair of pereiopoda are short, robust, and chelate, having the propodos longer than the carpus. The second pair are long, slender, and chelate, having the propodos shorter than the carpus. The remaining three pairs of pereiopoda are shorter than the second, and slightly more robust, and terminate in simple unguiculate dactyli; the inner surface of the carpi and propodi are armed with spines, those on the carpi being all equally long and strong, while those on the propodi gradually increase in length towards the distal extremity. The pleon has the lateral walls of the first five segments deeply produced, those of the fifth being quite as deep again as the body. The posterior pair of pleopoda are rather longer than the telson, and fringed with cilia, except upon the outer margin of the outer ramus. Telson longer than the last segment of the pleon, terminating in an obtuse point, and armed near the central and terminal margins with two pairs of short spines.

Mr. Angas, who took this very beautifully coloured species, describes it as of a "rich green, between apple and malachite, darker on the back, chrome-yellow and gamboge nose and lines along the back, then cobalt-blue, the rostrum being tipped with crimson. The eye-like spots upon the sides and back rivalled in brilliancy those of the peacock's tail; the centre was filled with intense peacock-blue and green, surrounded by a black ring, then one of crimson-scarlet, the side of each segment being coloured with exquisite purple that shades into a more or less rosy violet, the telson and posterior pair of pleopoda being crimson." Unfortunately it is difficult to retain colour in Crustacea; consequently all this brilliancy of tinting disappeared in about twelve hours. Three specimens of this species were dredged by Mr. Angas in St. Vincent's Gulf, in April 1861, four miles from the shore, on a weedy bottom, in $4\frac{1}{2}$ fathoms of water.

The description is taken from the largest specimen. The other two differ from the type, not only in size, being smaller, but also in the depth of the lateral walls of the fifth segment of the pleon.

Genus Caradina, Edwards.

Division A. *Without second appendage or process to the mandible.*

Caradina truncifrons. (Pl. XL. fig. 2.)

C. *rostro tam alto quam cephalon, margine anteriore truncato et serrato, margine dorsali uno dente instructo.*

Length $\frac{3}{4}$ths of an inch.

Rostrum deeper than the cephalon, the extremity being the deepest part; the anterior margin slightly excavate, and armed with nine small teeth. The rostrum is also furnished with a tooth upon the dorsal surface, immediately above the eyes. The pleon is robust, and but slightly curved. The eyes are small, and planted upon a short peduncle. The superior antennæ reach beyond the extremity of the rostrum. The inferior antennæ are imperfect, but are at least more than one-third the length of the animal; the squamiform appendage is acuminate, subapically tipped with a tooth, and reaches to the extremity of the rostrum. The first pair of gnathopoda are short, spatuliform, the distal extremity being fringed on the inner margin with small but strong spines. The first pair of pereiopoda are much shorter than the second, and by their peculiar formation afford the distinctive character that distinguishes this genus from *Hippolyte*: the propodos is long, ovate, and attached to the inferior process of a hollow or widely crescent-shaped carpus; this is ovate, slightly tapering to the dactylos, which is internally concave, and impinges against a similarly formed process of the propodos. The second pair of pereiopoda are longer than the second gnathopoda, slender and chelate, the propodos being stoutest at the carpal extremity, from which it narrows to the dactylos, which is internally hollow or spoon-shaped, and antagonizes with a similarly shaped process at the extremity of the propodos. The three posterior pairs of pereiopoda are longer and rather more slender than the preceding, are armed upon the posterior margin with five or six equidistant solitary spines, and terminate in an unguiculate dactylos; the posterior pair of pleopoda are about the same length as the telson. Telson terminating obtusely, armed with two strong spines at the apex, and subapically furnished with a short cilium.

The colour of this species when alive was not recorded by Mr. Angas; but since death it has assumed an orange tint, deepening to a red along the line of the primæ viæ.

This description is taken from a female loaded with ova, amongst which were found two specimens of the larva of a Bopyroid Crustacean.

This animal, like the preceding, was captured in about $4\frac{1}{2}$ fathoms of water in St. Vincent's Gulf, on weedy ground, about four miles off the land.

Division B. *Having a fixed denticulated second process on the mandible.*

Caradina cincinnuli. (Pl. XL. fig. 3.)

C. rostri margine dorsali lævi et cincinno parvo supra extremitatem tertii segmenti posteriorem regionis dorsalis. Pleontis antenna superiore quam rostrum longiore, antenna inferiore quam corpus breviore.

Length $\frac{3}{4}$ths of an inch.

The back of the carapace is smooth, projecting anteriorly into a rostrum that is only carinated below and armed with six teeth. The pleon is likewise smooth; but the third segment is slightly gibbose,

and furnished upon each side of the central line with a small tuft of hair, from which circumstance the specific name is derived. The eyes are large and prominent. The superior antennæ have the primary appendage but half the length of the secondary, The inferior antennæ have the squamiform appendage reaching quite to the extremity of the rostrum, rounded at the apex, and furnished with a sharp tooth one-third from the extremity, and have the flagellum more than half the length of the animal. The mandible is furnished with a short, fixed, small, anteriorly directed process. The first pair of pereiopoda are short, robust, and have the propodos long ovate, narrowing slightly towards the dactylos, and articulating upon the inferior process of the deeply concave anterior margin of the carpus. The second pair of pereiopoda are longer and more slender than the preceding, and have the propodos not larger than the carpus. Posterior pair of pleopoda rather longer than the telson. Telson terminating in two or three small spines.

This species was taken with the preceding, with which it generally agrees in structure, except in the formation of the mandible, which in this specimen has a small anteriorly directed process. This addition, being one of structure, I consider to be sufficiently important to distinguish the present species generically from that of the preceding; but since Milne-Edwards, in his character of the genus *Caradina*, has not described the form of the mandible, it is difficult, until an opportunity offers of examining a specimen of the original species of the genus, to determine which of the two forms of mandible belongs to the type. I have therefore thought it desirable to classify them under Divisions A and B, rather than make a new genus, which must, under the circumstances, be equivocal. Division B approximates in the character of the mandible more nearly to that of the genus *Hippolyte* than Division A.

This description is taken from a female specimen loaded with ova; and if we may judge from the majority of specimens in the small collection being so furnished, we should imagine the month of April, in which they were taken, to be a favourable period for their production.

The colour of this species has not been recorded from the living animal. In its preserved state it is yellowish, blushed with red along the dorsal surface and *primæ viæ*. It was taken, with the previous specimen, in Gulf St. Vincent.

Caradina tenuirostris. (Pl. XL. fig. 4.)

C. *rostro supra dentibus tribus apud basim et infra uno dente apud apicem armato.*

In this species the rostrum is long, slender, and armed with three teeth upon the upper surface near the base, and one upon the under surface near the apex. The pleon is gibbous at the third segment, being slightly produced posteriorly, and dorsally compressed. The eyes are large and prominent, having the peduncle quite half the length of the rostrum. The superior antennæ are one-third longer